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Ligand hyperfine Yb3+ interaction in CsCaF3 and Cs2NaYF6 crystals

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Abstract

The operator, which determines the contribution of processes including the polarization of central ion core to the ligand hyperfine interaction (LHFI), has been obtained in the second quantization representation in the basis of partially nonorthogonal orbitals. The contributions of the impurity Yb3+ ion to the LHFI parameters have been also calculated in Cs2NaYF6 and CsCaF3 crystals, which are determined by the mechanisms studied earlier. The single-particle orbital basis has been extended as compared to the previous work. There is a sufficiently good agreement with the experiment. © 2011 Pleiades Publishing, Ltd.

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